

**DETAILED SYLLABUS FOR THE POST OF TRADESMAN (TURNER) IN  
TECHNICAL EDUCATION DEPARTMENT**

**(CATEGORY NO. 196/2024)**

**Module 1 (marks 5)**

Measurement, lines standard, end standard and steel rule .  
Steel rule - Different types  
Hammer & Chisel - Materials, types and uses  
Angles of chisels  
Selection of metals  
Files - Different type, uses, grade, shape, hacksaw cutting  
Hacksaw frame  
Use of try square, bench vice and other types and its uses  
Try square  
Types fo vices  
Types of calipers  
Blocks, scribing block, straight edge  
Surface gauges (or) Scribing block

**Module 2 (marks 5)**

Drill machines - Different parts, use of punches  
Types of punches  
Nomenclature of drill  
Tap - Types, Die & die stock, care while tapping, tap extraction  
Die and die stock  
Tap extractor  
Methods of removing broken studs  
Calculation involved in finding out drill size (metric and inch)

**Module 3 (marks 10)**

Getting to know the lathe - Main components, lever position & lubrication points  
Definition of machine and machine tool, history & gradual development of lathe  
Classification of lathe, lathe specification  
Lathe function, construction of different parts of lathe  
Different parts of lathe, tailstock, carriage, saddle and compound rest  
The carriage  
Type of Lathe drive - Merits and de-merits, cone pulley/gear type  
Reducing speed, necessity, back gear & use  
Tumbler gear

Lathe cutting tools - Different types, shapes, specification of lathe tools, good cutting tool material & material properties

Types and specifications of carbide tools

Specification of lathe cutting tools, different type, shapes

Properties of good cutting tool materials

Different tool materials

Lathe accessories, independent chuck, self chuck, collet etc,

Lathe accessories - work - holding devices : 3 Jaw chuck

Lathe accessories - work - holding devices : 4 Jaw chuck

Chucks other than 3 Jaw and 4 Jaw types and their uses

### **Module 4 (marks 10)**

Vernier caliper - Its construction, principle, graduation

Graduations and reading of vernier calipers

Digital vernier caliper

Outside Micrometers, parts, principle and digital Micrometer

Graduations of metric outside micrometer

Reading dimensions with an outside micrometers

Error in micrometer

Digital micrometers

### **Module 5 (marks 10)**

Cutting speed and feed & depth of cut, recommended speed

Calculation involving cutting speed, feeds

Different types of micrometer, outside/inside and sources of error

Inside micrometer - metric

Three-point internal micrometer

Sources of measuring errors

Drills - different parts, types and sizes

Drill cutting angle, cutting speed

Cutting speed and RPM

Feed in drilling

Boring tools, counter sinking

Counter sinking

Counterboring and spot facing

Letter and number drills

Reamers types and uses

Hand reamers

Drill size for reaming

### **Module 6 (marks 5)**

Lubricant and coolant - types its necessity, system of lubrication, selection of coolant, handling & care

Methods of applying lubricant

Knurling, meaning, necessity, types, grades & cutting speed for knurling

Lathe mandrels - different types and their uses

### **Module 7 (marks 10)**

Concept of interchangeability, limits & fits

Symbols for holes, shaft, hole basis & shaft basis system, representation of tolerance in drawings

Driving plate and face plate

Fixed, travelling steadies, transfer caliper & its construction, uses

Lathe centre and types & their uses

Lathe carrier - Function, types of carrier and uses

Magnetic stand dial indicator its uses and care

Tool posts - Types and tool setting

### **Module 8 (marks 15)**

Taper – different methods of expressing tapers, different standard tapers. Method of taper turning, important dimensions of taper. Taper turning by swiveling compound slide, its calculation.

### **Module 9 (marks 15)**

Different types of screw thread- their forms and elements. Application of each type of thread. Drive train. Chain gear formula calculation. Different methods of forming threads. Calculation involved in finding core dia., gear train (simple gearing) calculation.

### **Module 10 (marks 15)**

Introduction to CNC , CNC Technology basics ,Machine model, control system and specification ,Axis , convention of CNC machine , Importance of feedback system and Concept of co-ordinate geometry , Coordinate Geometry & Machine Axis , CNC Turning ,Preparation of part programming Operational modes , Types of offsets ,Tool path study of machining operation (Straight turning)

,Cutting parameters, cutting speed and feed, depth of cut,CSM, tool wear, tool life ,Tool setting and Data Input. Tool Geometry, Insert Type, Nomenclature of Inserts .Describe tooling system for turning .Setting work and tool offset .Describe tooling system for CNC Turning centres . Cutting tool material for CNC turning .ISO Nomenclature for Turning tool holder, boring tool holder, indexable . Tool holders and inserts for radial grooving, face grooving, threading and Programme and Simulation.

**NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.**